CRUISE REPORT

Southeast Fishery-Independent Survey (SEFIS)

R/V *Savannah* Cruise SH-10-24
27 – 31 July, 2010
Total Number of Sea Days - 5

U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service
Southeast Fisheries Science Center
Beaufort Laboratory
101 Pivers Island Rd.
Beaufort, NC 28516

46 camera-trap deployments
2 longline deployments
8 CTD casts

INTRODUCTION

The R/V *Savannah* departed Savannah, GA, on 27 July 2010 at 1630 to initiate the Southeast Fishery-Independent Survey (SEFIS) in continental shelf and shelf-break waters off the southeastern US. SEFIS was created by the National Marine Fisheries Service in 2010 and is run out of the Beaufort Laboratory. This survey conducts applied fishery-independent sampling and related research focusing on the assessment of spatial variability in distribution and abundance of red snapper and other reef species within the snapper-grouper complex, via data collected from fish traps, video cameras, and acoustics. During this survey, chevron trap catches and associated underwater video recordings were collected from randomly selected stations on known hardbottom habitats between 30.88 °N and 31.74 °N. A total of 46 stations were sampled with camera-trap gear over 5 sea days between 28 and 49 meter depths.

OBJECTIVES

1. Increase the spatial footprint and sample size of fishery-independent sampling in US southeast waters. Baited chevron traps, most of which had one or more mounted high-definition video cameras, were utilized for hardbottom reef fish community assessments and collection of reef fish for biological samples (i.e., otoliths and gonads). Longline sampling was also conducted at two stations.

2. Use video cameras on chevron traps to address trap selectivity issues, locate and describe hardbottom habitats, and provide an additional index of abundance for stock assessments.

3. Use a CTD instrument package to collect environmental data (temperature, salinity, dissolved oxygen) at camera-trap sampling locations.

METHODS

Camera-Trap Sampling

Camera-trap gear typically consisted of one high definition video camera (one trap had two cameras) mounted to a chevron fish trap. Chevron traps were constructed out of plastic-coated wire mesh. GoPro cameras (model HD Hero) were mounted above the mouth of the trap, looking away from the trap (Figure 1). Traps were baited with Atlantic menhaden, *Brevoortia tyrannus*, and video cameras were set to record before deployment. Camera-traps were deployed at randomly selected stations at least 200 meters apart on suspected or known hardbottom habitats, and left to soak for approximately 90 minutes. Camera-traps were most often deployed in sets of six. A CTD cast (see environmental data collection) was conducted during the 90-minute soak time for each trap set. Fish catches were processed after trap retrieval. All fish were counted, weighed, and measured to the nearest millimeter. Individuals of select species (e.g., species in the snapper-grouper complex) were further processed for additional lengths and biological samples (otoliths, gonads, and DNA). Video files were downloaded and backed up on media storage devices. Biological samples and video files were brought to the Beaufort laboratory for further processing and analysis.

Longline Sampling
We also deployed longlines to sample high-relief areas that were too difficult to sample with chevron traps. Longlines used in these areas were relatively short (25.6 m of solid braid Dacron) and consisted of 20 gangions (#5 or #7 hooks) placed 1.2 m apart on the groundline (called 'short bottom long lines' by MARMAP). The longline was weighted and attached to a polypropylene line that was buoyed to the surface with two polyballs. Longlines were baited with squid and soaked for approximately 90 minutes. Similar to chevron trap samples, fish collected with longline gear were counted, weighed, measured, and processed for biological samples (otoliths, gonads, and DNA).

Environmental Data Collection
Environmental data were collected with a Seabird "Conductivity, Temperature and Depth" instrument package (CTD; model SBE 25) and Scientific Computer System software (SCS). CTD casts were conducted near the middle of each camera-trap soak period; instruments were lowered to within 2 meters of the bottom. Numerous water profile measurements were collected, including temperature (◦C), salinity (parts per thousand), and dissolved oxygen (mg/L). CTD data were archived for further processing at the Beaufort laboratory. SCS software (version 4.2.3) was used to collect specific information for each fishing and CTD event, including soak time/cast duration as well as start and end latitude, longitude, and depth (m).

SURVEY RESULTS

Camera-Trap Sampling
46 stations were sampled with camera-trap gear and 12 stations were sampled with chevron traps only (with no video cameras attached, Table 1, Figure 2). From these traps, 16 taxa were collected and worked up for length frequency data.

Longline Sampling
2 stations were sampled with longline gear, but no fish were collected at these stations.

Environmental Data Collection
8 CTD casts were conducted during the cruise (Table 1, Figure 2). CTD data were processed back at the lab using Seabird SBE Data Processing software (version 7.2) and archived in a database at the NMFS-Beaufort Laboratory for future analysis.

Table 1. Summary of station coordinates, depth, date and time for each fishing event (camera-trap Gear=324, longline Gear=061) and CTD cast (Gear=298) conducted on the SH-10-24 survey. Collection numbers with asterisks are stations that were sampled with chevron traps only (video cameras were not attached to the trap). Times were recorded in Coordinated Universal Time (UTC).

Collection Number	Gear	Date	Time (UTC)	Latitude	Longitude	Depth (m)
100001*	324	7/28/2010	12:18:00	31.69	-80.34	28
100002*	324	7/28/2010	12:26:00	31.69	-80.33	28
100003*	324	7/28/2010	12:33:00	31.69	-80.33	28
100004*	324	7/28/2010	12:38:00	31.68	-80.33	29
100005*	324	7/28/2010	12:46:00	31.68	-80.32	29
100006*	324	7/28/2010	12:58:00	31.69	-80.32	29
100007*	298	7/28/2010	13:11:00	31.69	-80.33	29
100008*	324	7/28/2010	15:35:00	31.69	-80.32	30
100009*	324	7/28/2010	15:43:00	31.69	-80.32	29
100010*	324	7/28/2010	15:53:00	31.68	-80.32	29
100011*	324	7/28/2010	16:04:00	31.68	-80.33	29
100012*	324	7/28/2010	16:19:00	31.68	-80.33	28
100013	324	7/28/2010	16:29:00	31.68	-80.33	28
100014	298	7/28/2010	16:48:00	31.69	-80.33	28
100015	324	7/28/2010	19:12:00	31.74	-80.22	31
100016	324	7/28/2010	19:20:00	31.74	-80.22	31
100017	324	7/28/2010	19:25:00	31.74	-80.22	32
100018	324	7/28/2010	19:55:00	31.74	-80.23	30
100019	324	7/28/2010	20:00:00	31.73	-80.23	30
100020	324	7/28/2010	20:13:00	31.73	-80.24	28
100021	298	7/28/2010	20:30:00	31.73	-80.24	27
100022	324	7/29/2010	11:47:00	30.89	-80.61	33
100023	324	7/29/2010	11:50:00	30.89	-80.61	32
100024	324	7/29/2010	11:59:00	30.89	-80.61	33
100025	324	7/29/2010	12:16:00	30.89	-80.62	32
100026	324	7/29/2010	12:27:00	30.88	-80.61	34
100027	324	7/29/2010	12:33:00	30.89	-80.61	33
100028	298	7/29/2010	12:45:00	30.89	-80.61	33
100029	324	7/29/2010	15:02:00	30.91	-80.59	34
100030	324	7/29/2010	15:06:00	30.91	-80.60	34
100031	324	7/29/2010	15:14:00	30.90	-80.60	34
100032	324	7/29/2010	15:18:00	30.90	-80.60	34
100033	324	7/29/2010	15:28:00	30.90	-80.60	33
100034	298	7/29/2010	16:01:00	30.92	-80.58	33
100035	324	7/29/2010	18:02:00	30.91	-80.60	33
100036	324	7/29/2010	18:05:00	30.91	-80.61	34

Collection Number	Gear	Date	Time (UTC)	Latitude	Longitude	Depth (m)
100037	324	7/29/2010	18:13:00	30.91	-80.61	33
100038	324	7/29/2010	18:19:00	30.91	-80.61	33
100039	324	7/29/2010	18:40:00	30.91	-80.62	32
100040	324	7/29/2010	18:46:00	30.91	-80.62	33
100041	298	7/29/2010	18:53:00	30.92	-80.62	33
100042	061	7/29/2010	21:03:00	30.91	-80.61	33
100043	061	7/29/2010	21:16:00	30.91	-80.60	33
100044	324	7/30/2010	11:52:00	31.22	-79.89	48
100045	324	7/30/2010	12:08:00	31.23	-79.89	47
100046	324	7/30/2010	12:21:00	31.23	-79.89	48
100047	324	7/30/2010	12:28:00	31.23	-79.89	49
100048	324	7/30/2010	12:37:00	31.24	-79.89	47
100049	324	7/30/2010	12:52:00	31.24	-79.88	49
100050	298	7/30/2010	13:10:00	31.23	-79.88	59
100051	324	7/30/2010	20:43:00	31.43	-80.33	37
100052	324	7/30/2010	20:54:00	31.44	-80.33	37
100053	324	7/30/2010	21:10:00	31.43	-80.34	36
100054	324	7/30/2010	21:37:00	31.42	-80.33	37
100055	324	7/30/2010	21:44:00	31.41	-80.32	36
100056	298	7/30/2010	21:52:00	31.41	-80.32	36

Figure 1. Chevron trap with GoPro® video camera attached over mouth position.

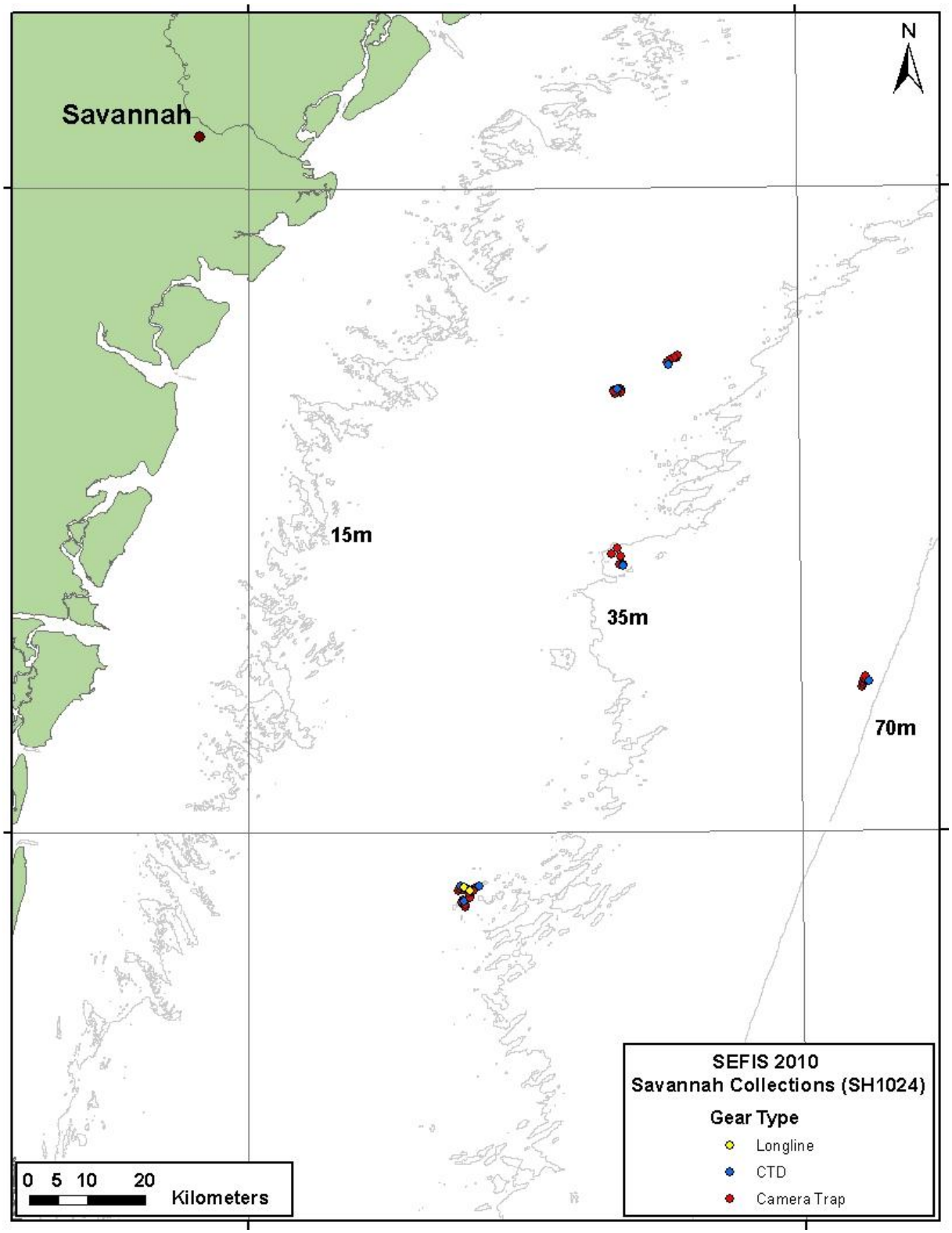

Figure 2. Locations of stations sampled with camera-trap, longline and CTD gear on the SH-10-24 survey. Note that symbols overlap in many cases.

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